AVIATION

The Oldest American Aeronautical Magazine

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A Wonderful Airplane Picture, Whether Taken from the Air or Not

(C) Alfred G. Buckham

VOLUME XIX

NUMBER 22

SPECIAL FEATURES

THE MITCHELL COURT MARTIAL

DESIGNING ENGINES INTO AIRPLANES

H'ODD LUGGAGE—CY CALDWELL

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CONTENTS

Editorial	769	Model Luggage	774
The Mitchell Trial	770	Recent Airplane and Seaplane Records	775
Aeronautical Chamber of Commerce	773	Designing Engines Into Airplanes	776

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VOL. XIX NOVEMBER 30, 1925 No. 22

Aeronautical Investors

THERE IS one element in the development of aerial transportation on which it is so hard to gather data that it has been largely overlooked, and this is the number of investors, who have already put their money into aircraft ventures. As there have been few air transport lines established in this country it is commonly supposed that the American public has not put any money into flying enterprises. The case is, in reality, quite to the contrary, there being probably no country in the world where so much money has been put into commercial flying.

Throughout the country, from Maine to California, ex-war fliers have persuaded their friends to back them in buying one or two planes. Some of the fliers have made good while others fell by the wayside and, though it is impossible to tell how much has been invested in this way, the figure undoubtedly runs into very large sums. In almost every town someone or someone's friend has put money into an aeronautical venture and this money has been of very real service in establishing the very considerable amount of commercial aviation which exists in this country. Viewed in general, the aeronautical investments of many thousand people have not been successful and it is difficult to realize the number of people who base their prejudice against putting money into aviation on their own personal experience or the experience of their friends.

The situation has been further aggravated by the inexperienced business methods of many fliers and by the stock salesmen, who saw great possibilities in the slogan, 'Get in on the ground floor of a new Industry'. However, there are many aeronautical factories and flying services that have grown to substantial size, largely from earnings and, with the sounder business methods, which have come through experience, there will be many more.

An American Lightplane Engine

ALMOST significant development, from the standpoint of the lightplane enthusiast, is the announcement, of the fact that the long awaited Morehouse engine is to be manufactured and placed on the market by the Wright Aeronautical Corporation. As stated in the announcement, the tests of the engine were completed over a year ago, but, with no engine manufacturer farsighted enough to undertake the marketing of this much needed engine, the field remained open another year.

At the Dayton Air Races last year, the need for a light low powered airplane engine was very pronounced, all of the adapted motorcycle engines used by contestants in the light plane races, performing in a most unreliable manner. This year at Mitchel Field the urgency of the demand for an American lightplane engine became so great that it was necessary to look abroad for the needed reliable power plant. The Bristol "Cherub" engine in the "Powell" lightplane undoubtedly filled this need, but only to further emphasize the lack of such an engine as an American built product.

The Morehouse engine has not as yet made its public appearance, but the reported details of the tests through which it has satisfactorily passed, together with the fact that the production of the engine is to have the backing of so vast an experience as that of the Wright Aeronautical Corporation, ensure the excellence of the Morehouse engine and the confidence with which lightplane builders may set their minds to designing planes around this little power plant, in preparation for next year's lightplane races.

A Manufacturing Opportunity

ONE OF THE most interesting facts of recent years has been the development of what might almost be termed a standard type of airplane. Reference is made to the airplanes built around the OX engine. The number of these planes in use, is so considerable that it was to be expected that some engine manufacturer would have built a commercial engine of about the same horsepower. It takes several years to develop and to place on the market any new aero engine and by that time the stock of cheap OX engines will be exhausted. In the meantime there would probably be many who would install the more efficient power plant, in spite of the higher price, in order to get a plane with better performance.

Curiously enough several manufacturers are placing commercial engines of considerably lower horsepower on the market. There is undoubtedly a field for a two place plane of under 80 hp. but at present there are so few planes of this type in this country that there is practically no call for immediate delivery of engines of this power. In Europe there are many planes of this type, such as the Forman "Sport" and the De Haviland "Moth". They are considerably cheaper to build and the housing, maintenance and operating costs are proportionally less. As cost is one of the important items in the sale of planes, it would seem that there was a real opportunity for some American airplane manufacturer to tackle the problem in a serious way.

It is, of course, possible to build a three, or even a four place plane around an engine of under 80 hp. but the performance would probably not be sufficient to make the machine popular. The two place plane is the more logical type. It can be used to considerable advantage for training purposes, for private owners and for certain kinds of photographic observation work. It could not, of course, replace the larger types but at almost every field, such a plane would fulfill many requirements.

The Mitchell Trial

Hearing of Long List of Witnesses For the Defense Draws to a Close

AFTER a recess of three days, called on the afternoon of Nov 13, as a result of heated controversies arising from questions of the validity of numerous documents introduced to the court by Major Dargue, on the witness stand, the court martial of Col William Mitchell resumed its sessions on Nov 17 and heard five new witnesses, summoned by the defense to support the charges made by Colonel Mitchell against the War and Navy Departments' administration of aeronautics. The witnesses heard during the day were Maj H. M Hickam, Maj Reed G Landis, Capt. Willis Hale, Lieut. Victor E Bertrandis, and Lieut Donald G Duke.

From the outset the General Staff, in effect, resumed control of the prosecution, for Maj Frances B Wilby, attached to the office of Brig Gen H. A Drum, of the General Staff, together with Maj Allen Gullion, of the Judge Advocate General's office, conducted the cross-examination and were nominated as assistant trial judge advocates, to aid in cross-questioning.

Validity of Defense Questioned

The question of the validity of the evidence which was being massed into the record by the defense, was again raised at the reopening of the court martial, when Col Blanton Winship, law member of the court, informed defense and prosecution counsel that he had been instructed to determine whether the line of evidence being pursued by the defense, was admissable, on the grounds that it was being given for the purpose of extenuation rather than as a complete defense Representative Frank R. Reid, counsel for Colonel Mitchell, stated that, since the defense had almost concluded its case, the question could very well be left over until the prosecution commenced its rebuttal and thus be secured uninterruption of the court proceedings. As a result, the question which several times before had been on the verge of a decision again went un answered

Opening its case again, the defense called, as the first witness, Maj. Reed G Landis of Chicago, American Ace with a record of 12 enemy planes during the World War The basis of his testimony was in corroboration of the contention of Colonel Mitchell as to the ineffectiveness of anti-aircraft artillery It was brought out that, during 154 hours of flying over the enemy lines, anti-aircraft fire never interfered with the carrying out of the witness's mission He stated that, during his experience, he saw but one plane hit by anti-aircraft fire from the ground.

The Training of Personnel

Maj. Horace Hickam, of Langley Field, explained, on the witness stand, the severity with which the weeding-out process is carried on in flying schools First, he said, only 37% pass the entrance examinations; then, only 50% of the remainder pass the primary grade, and only 60% of those in the advance flying school, complete the entire course He further told of the shortage of pilots and of the efforts being made to train a sufficient number for the regular service. The prosecution brought the questioning of the witness to a sudden close when Mr Reid asked the witness whether he could cite a case where a pilot had been ordered by a non-flying officer to take the air and had been subsequently killed as a result Before Major Hickam could reply, the question was ruled out by Col Blanton Winship, law member Mr Reid, however, persisted along this line and extracted from Major Hickam an affirmative reply to a questioning inquiring into the witness's knowledge of any case in which a naval pilot had been ordered to fly in a plane which had previously been condemned

Capt Willis Hale, of Langley Field, Va, who is in command of the 20th Bombing Squadron, declared that recent searchlight tests over Camp Dix, conducted this summer were unnecessarily dangerous and were made, he testified, over the protests of the airmen Captain Hale described the risks, which were taken as a result of command by non-flying officers Describing the risks which fliers had to run, Captain Hale said that spotters on bombing planes had to be on the wings, encumbered with flying clothes and a parachute, with a lead pencil and a "grid" in the right hand and a stop watch and a marking dial in the left hand. He said, a night maneuver was undertaken in July, 1925, according to a formation prescribed by the General Staff and all the fliers thought the maneuver unsafe

Refuse to Stop Maneuvers

General Summerall, said Captain Hale, although told of the dangers of such a formation, would not intercede for the flyers, and following these maneuvers all but two of the pilots, who took part, had to be given sick leave

When Lieut Donald G Duke, who is chief of the airways section of the Army Air Service, went on the stand, he testified to hazards in the mountainous districts, especially between Washington and Moundsville, W. Va, due to the lack of accurate weather reports He stated that, when the Army Air Service sought to have a few enlisted men stationed at vital points along the airways, the request was denied owing to lack of funds The cost per man, it was declared, would be but $2 per day In answering questions put by Mr Reid, Lieut Duke said it was "apparently true" that Army flyers are being used as "pawns" and are subjected to unnecessary hazards by the failure of the War Department to make adequate provision for their safety

Air Service Planes in Service

On the question of the maintenance of Air Service machines in storage and the conditions under which he has found them, Lieut Victor E Bertrandis, who is chief inspector of experimental construction at McCook Field, and who, incidentally served with Captain Rickenbacker during the World War, said, that the DH's that are in storage or under repair are, generally speaking, in a very poor condition. Captain Bertrandis said in inspecting the machines, it is very difficult at times to discover visually certain defects due to deterioration, notably dry rot

The First Rule of Command

On the following day Rear Admiral William S. Sims, testifying before the court, dwelt at some length on the subject of the Shenandoah accident, declaring that those who planned the itinerary of the Shenandoah on its last flight, had violated the "first rule of command" "This rule," he said, "was to pick the very best subordinates there are and let them choose the methods to be followed thereafter We may assume," he added, "that the commanding officer of the Shenandoah and his assistants were the best men the Navy could provide If they were not the entire trip was a criminal act. Therefore, at Lakehurst was concentrated the best information and the best brains on the science of lighter-than-air craft. Therefore, the people who planned the itinerary could not know as much as these experts and, consequently, they violated the first rule of command. I don't know their motives for this itinerary. If they were military, I approve, if they were political, I do not"

Navy Has But One Aircraft Carrier

Speaking of American Naval aviation, Admiral Sims said that we had only one airplane carrier—the Langley—which was a converted collier, capable of a speed of about 14 knots. The average speed of the fleet, he said, was from twenty to twenty-one knots Great Britain on the other hand has three or four airplane carriers. He further expressed the opinion that any fleet without adequate airplane carriers, would be at the mercy of a fleet efficiently equipped in this respect

Admiral Sims spoke in strong terms regarding the administration of the Navy Department, declaring it to be inefficient and, moreover, he asserted that a practice had grown up of naming "ignorant and uneducated officers" for many of the high commands He explained that the Naval War College is an institution for the training of officers for these commands, yet this fact, in numerous instances, is overlooked by the Navy Department heads Asked if Admiral Eberle, former Commander in Chief of the fleet and now Chief of Operations, came within the ignorant and uneducated class, the answer was an emphatic affirmative At this, Major Gullion, acting as judge advocate, read the list of officers of flag rank and Admiral Sims pointed out those who were not graduates of the War College. In addition to Admiral Eberle, the non-graduates included Admiral S S Robison, the new Commander in Chief of the fleet, and Rear Admiral Joseph Strauss, who was retired from active service recently

Discussing the effectiveness of anti-aircraft fire in the World War, Admiral Sims said his information, which came to him as Commander-in-Chief of the American forces in European waters, ranged from one hit in 12,000 to one in 65,000

Shenandoah Deprived of Safety Valves

The first witness of the day was Capt Anton Heinen, his testimony preceeding that of Admiral Sims After it was brought out that the number of valves in the Shenandoah had been reduced, Mr Reid asked Capt Heinen the part played by the automatic valves in the handling of large rigid airships. Captain Heinen explained that these valves serve as primary safety valves to relieve expanding gas after the airship has reached its pressure height He explained that, while the Shenandoah originally possessed eighteen such valves, ten had been removed, and this, Captain Heinen pointed out, would reduce the safety factor from "100% to zero"

"When an airship ascends," he explained, "the gas expands 1% for every 240 ft. of altitude attained, and, in the case of the Shenandoah, every 240 ft gained, the helium would expand 21,000 cu ft When the ship reaches 100% full, it is called the pressure height and then, unless the gas is released, the danger of exploding cells becomes possible" With more than half of the ships valves removed, the danger of insufficient gas escape became manifest Captain Heinen declared.

Captain Heinen was questioned at some length on the use the Navy Department had made of the German crew who brought the Los Angeles over here from Germany and, after he had expressed the opinion that little advantage had been taken of this opportunity, he was excused from the witness stand

Attempt to Hold Mitchell Responsible

A very vigorous attempt was made, during the day, by the prosecution to lay the blame of an accident to the "Eagle" four years ago, directly to Colonel Mitchell. It was at the time that Maj William R Blair of the Signal Corps was on the witness stand being cross-questioned by Major Wilby Major Blair was the organizer of the meteorological service in the A E F during the World War and was formerly of the Weather Bureau Major Wilby recalled that Major Blair had mentioned that in 1921 an "Eagle" plane had crashed between Langley and Bolling Fields and that six passengers were killed as a result He then asked if the witness knew that Colonel Mitchell was at Langley Field on that day and "in command", and suggested that, consequently, Colonel Mitchell was responsible for these deaths Major Blair pointed out that Colonel Mitchell made a flight himself, upon which the prosecution stated that Colonel Mitchell had used a single seater plane and, himself, had had a great deal of difficulty in getting successfully through the storm

Major Blair pointed out, in connection with this case, that the weather report received at Langley Field was incomplete and only predicted the possibility of storm. He pointed out that overseas, during the war accurate weather reports were made, but that the report received at Langley Field on this occasion, was based on but one observation, from which it would be impossible to formulate an accurate forecast. Incidentally, it was afterwards proved that, at the time, Colonel Mitchell was Assistant Chief of the Air Service and on a visit to Langley Field He happened, therefore, to be the senior officer on the field but that, due to the way in which the meteorological service was and is still hampered, it was impossible for anyone to make an accurate forecast of weather conditions

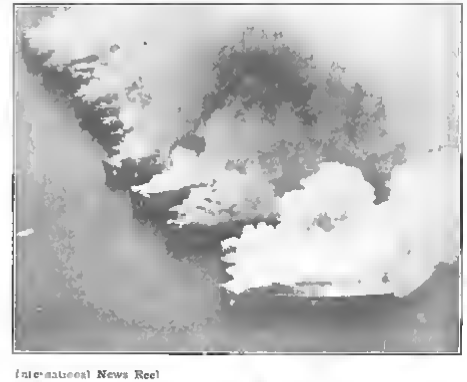
Other Air Officers Heard

Other witnesses during the day, with one exception, were all air officers They were Major Kennedy, who told of his visit to the scene of the Shenandoah wreck, Major Gray, whose testimony related to the need of more accurate weather information, Lieut Col J. A. Pagelow, in command of Scott Field, Ill, Capt. Charles Clark of Langley Field and Lieut W A Anderson of McCook Field For the most part, their testimony was technical and had to do with gases, parachutes and anti aircraft guns. The other witness was Ernest Sheehan, a newspaper man of Cambridge, Ohio Mr Sheehan arrived at the scene of the Shenandoah wreck within half an hour after the Shenandoah crashed His testimony was short and, in effect asserted that Commander Klein had ordered the survivors to say nothing and had also asked him to be careful what he printed

America's Greatest Flyers Testify

On the following day, Nov 19, for the virtual termination of testimony by witnesses in behalf of Colonel Mitchell, a group of America's greatest flyers took the witness stand in support of the defense Capt Edw. Rickenbacker, Lieut Leigh Wade, of the Round-the-World Flight, and Maj Reed M Chambers, the "runner up" to Rickenbacker, as an American ace, all testified that there was much that was wrong with American aviation, both in the Army and the Navy.

Captain Rickenbacker declared that the only solution to the present problem of equipment in the Army Air Service was to scrap all the war time equipment and provide up-to-date replacements He further asserted, in answer to questions, that it was "suicide" to fly without parachutes. Denying



International News Reel

Thirty one wooden transport ships built during the war for the Emergency Fleet Corporation, at an approximate cost of one million dollars each were recently scrapped in the Potomac river near Quantico, Va. It would seem that here the Navy neglected an excellent opportunity of carrying out bombing tests for these ships would have made perfectly satisfactory targets for trials to further prove the accuracy of bombs dropped from airplanes. The above photograph, taken by the Signal Corps, is an aerial view of the thirty-one million dollar bonfire

any merit to anti-aircraft fire, Captain Rickenbacker said that he had flown 300 hours over enemy territory and that enemy anti-aircraft fire had never prevented him from carrying out his mission. They afforded no protection. He said he knew of no enemy aircraft shot down by American guns, and that the only American flyer, whom he knew of as having been shot down, was Lieut. Hamilton Coolidge, who, he thought, was brought down as a result of an American barrage.

Doubts Anti-Aircraft Records

Major Wilby, for the prosecution, asked both Captain Rickenbacker and Major Chambers, who was on the witness stand later, if they were aware that out of 520 shots fired by the 5th anti-Aircraft Battery during the war, one enemy plane was brought down, and that out of 2,116 shots fired by the 2nd Battery, two planes were brought down. He also pointed out that these shots can be fired at the rate of 605 in ten minutes. Both Captain Rickenbacker and Major Chambers termed these figures "extraordinary" the former saying" I would not be surprised at anything the official records show." Captain Rickenbacker added to the dark view of American aviation when he said that the United States ranked eighth in air power and that the countries ahead of her were in the order: France, England, Italy, Germany, Russia, Japan and Poland.

Hawaii Flight Organization Criticized

Lieutenant Wade, on the Witness stand, criticised the Hawaiian flight organization, mainly on the point of the number of crew carried on the planes. He asserted that there should have been two men aboard each plane and that they should have used smoke bombs for obtaining their bearings instead of radio. Under cross-examination by Major Gullion, Lieutenant Wade said that the round the world flyers "in practically every case were consulted by the Navy before any decision was made affecting the flight and that the attitude of the Navy was one of co-operation."

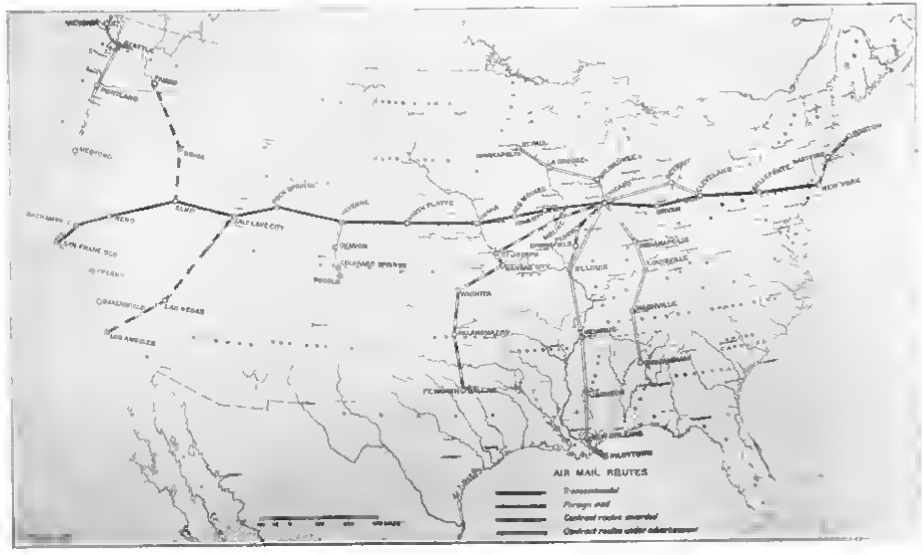
Langley in the Hawaiian Maneuvers

Lieut. H. W. Sheridan, who was the last witness called, was particularly severe in his indictment of naval aviation. Lieutenant Sheridan was the Army observer on board the aircraft carrier "Langley" at the Hawaiian maneuvers. In answer to a question put by Mr. Reid as to whether, in the maneuvers, the Langley stayed up with the fleet, Lieutenant Sheridan retorted: "No, the fleet stayed back with the Langley." The cross-questioning of Lieutenant Sheridan was reserved until the following day and the remainder of the afternoon was devoted to the reading of stipulations, mainly from attachés in foreign countries, brought in to support Colonel Mitchell's charges regarding the relative strength of the American Air Service.

Testimony Held Valid

On the following day, with the conclusion of the defense testimony through the many witnesses which had been heard, another phase in the court martial proceedings was drawn to a close. The prosecution, in cross examining Lieutenant Sheridan was unsuccessful in its attempt to strike the entire testimony of this witness out of the record on the grounds that he did not know "what he was talking about." Lieutenant Sheridan had made his observations on the Hawaiian maneuvers as an eye witness and the fact that he was an army officer instead of a naval man was ruled to bear no weight in proving the validity of his testimony.

The court adjourned until Monday, Nov. 23, when Colonel Mitchell himself takes the witness stand under the cross-examination of the prosecution.



The above map shows graphically the air mail system of the United States virtually as it stands today. The map not only shows the route of the Post Office Air Mail Service connecting New York and San Francisco but also the contract routes which have been either awarded or as yet only advertised. The five routes, contracts for which were recently closed will be seen on the map. They are: Boston-New York, Chicago-St. Louis, Chicago-Dallas, Salt Lake City-Los Angeles and Elko-Pasco.

The Aeronautical Chamber of Commerce

Officers for the Year 1925-26 Elected at Annual Meeting of the Board of Governors

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Aviation Conditions in Honduras

AVIATION is in receipt of a long and most illuminating letter from Mr. T. C. Pounds of Tegucigalpa, Honduras. The letter is in reply to an article in a July number of AVIATION, which painted conditions in Honduras in most dreary colors. Pounds, on the contrary, has found conditions much more satisfactory. He names nine landing fields which can be used and states that, whereas along the North Coast, from Puerto Cortes toward the East, the conditions for forced landings are far from favorable, once over the range of coastal mountains, there are many natural meadows and flat lands, quite free from trees. Mr. Pounds has had several forced landings and has always found the natives most willing to be helpful and hospitable.

As was pointed out in the previous article, traveling by established methods in Honduras is not always easy and there are many places where air transportation would be cheaper and naturally much faster than transportation by automobile, motor launch and mule. From the point of view of aviation supplies, conditions are rather difficult and can only be met by the adequate organization of the exploiting company.

Japan to Italy Flight Progresses

Comdr. Francesco di Pinedo arrived at Bagdad, Irak, from Bushire, Persia, on his return flight from Japan to Italy, on Nov. 4. The flight is to be continued shortly.

H'odd Luggage

By 'CY' CALDWELL

BEG y'pardon, Sir! Very h'odd luggage h'indeed Sir!" So spoke a Cockney porter to me at King's Cross Station, Lunnon, back in '17, as he struggled with a bed-roll valise, a Belgian Police dog, and a green parrot in a cage, while I followed him with a large and disgusted Maux cat in my arms, and felt quite as foolish as I doubtless looked. The dog and the parrot, I had smuggled from France in an obsolete two-seater which I had ferried to England for home service, and the cat—that accursed feline—I had purchased in London. The dog was for a girl up in Yorkshire, the parrot was for her aunt, who didn't especially like me, and the cat was a peace-offering to the girl's grandmother, who actually despised me. She used to sit by the fire glaring at me out of a cold and watery eye, as I made love to her grandchild. Ah, well, the girl married someone else—and so did I—the aunt went her ways, and grandmother went eventually to where no cats have access. They're just shadows from the past. The most real of all to me now, is that porter who said, 'Very h'odd luggage h'indeed, Sir!" Alas, I've carried much odd luggage since.

Odder than Odd

Can any luggage be more odd—or more useless—than the photograph of a bunch of solemn numbskulls, sitting down to decide whether or not a man shall teach the theory of evolution in the schools of Tennessee? I may be wrong, but I maintain this is the most useless luggage I have ever carried. It beats the Maux cat a mile. I'll say this for the cat, it would on occasion scratch grandmother and thus divert her attention from me. The photo did nothing whatever for me, except bring me bad luck. I had a forced landing in Tennessee, another in Kentucky, and one more in Ohio. I am not superstitious but I've seen the picture, and I'd say off-hand that it could have stopped the Leviathan. No clock could have withstood the baleful effect of those solemn jury faces, for even a minute. Yet a newspaper syndicate paid big money to have me haul that wrecked chromo from Dayton, Tennessee under the mad delusion that the public yearned to see it!

The same news people paid a large sum to have pictures of the Democratic Convention flown to Chicago. Can anything be sillier than a picture of any convention—especially a Democratic one? Even that parrot I toted off to Auntie had more sense. I never heard it say, "47 votes for Underwood." In fact, it was, in many ways, an admirable bird. I taught it to swear with vigor, until it was a treat to hear it. Even Auntie took a secret delight in the bird's vocabulary. It was just like having a man about the house. But I have yet to meet the person who derived any pleasure from seeing that convention picture with which I flew 750 weary miles.

The Man with the Golden Key

Another curious bit of luggage was "The Man With The Golden Key." He was a little fat man, with an earnest expression on his face. But, although he was in the real estate business, he must have had romance concealed somewhere about him, for he conceived the idea of opening his new subdivision with a golden key dropped from the clouds. The key was wood and the gold was gilt paint. The only real thing was the clouds. And they were too real—great soggy masses that dripped rain.

Off we started, the little man, the big key—it was 4 ft. long—and I. We were to do several loops over the crowd; he would drop the key, and the great sale would be open. He had everything arranged except rain insurance. We flew to the subdivision. There were the tent, the flags, the salesmen, and a crowd of prospective buyers—about three dozen assorted small boys. The clouds were at 300 ft. when I looped. At the top of the loops we were in the clouds, so all the crowd saw was an insane airplane leaping up out of sight, dashing madly into view again, only to disappear once more. In the last loop he lost his key. It smote the windshield, hit me a glancing blow on the head, and stuck between the fin and a tie rod. We flew it right back to the field with us, so I guess that subdivision never did get opened. The man got out, looked the plane over thoughtfully, and said, "Well, I tell you! For you, mine Friendt, these airplanes is all right and't it? For me, no more!" I believe he was Irish.

Flying Blindfold

Two days ago, I flew from the Atlantic coast, or thereabouts, to Cleveland, with a cabinet sized phonograph—one of the improved types they're making such a stir about—tied across the fuselage, just in front of me. It stuck out a foot on both sides and two feet up. I was naturally as blind as a bat, forward. This was especially nice when flying through the mountains to Bellefonte. To land, it was necessary to swish the plane from side to side so that I could peek ahead for a second, then straighten out and peer sideways. Fortunately, I knew Bellefonte and Cleveland fields. But I'm still wondering just how I'd have lit in one of those little mountainside fields, had I a forced landing. Here indeed is food for speculation. But it's "h'odd luggage," like this phonograph, that gives commercial flying its peculiar charm.

I have carried pigeons, dogs, a Japanese admiral, a Royal Air Force bishop, assorted Army chaplains, whisky, (in one case, right along with the Chaplain,) a boy and girl, who made love to each other in the air, special airplane parts urgently required, ladies dresses from New York, and an assorted collection of humanity in all stages of reason and unreason. I've also carried reporters and movie photographers. Still, we all have some low habits.

The Curative Value of Flying

But, lately, the oddest luggage of all has presented itself for aerial transportation. I refer to those unfortunates who believe, in whose relations believe for them, that a plane can cure broken ear drums or heal diseased brain tissue. There is nothing funny in the pathetic hope of these people, fostered by the ignorant or vicious publicity given the few cases, where some benefit, real or imaginary, may have accrued to the sufferer. It is useless to tell them that airplanes have no medicinal value. They've read in the paper that deafness, nay old deafness, can be cured by a flight. And if it's in the paper it must be true. Up they go.

I carried one chap, who, when he went up, could barely hear. When he came down he couldn't hear at all. However, I wrote on a piece of paper for him, "Try going down a mine next time." He thanked me, in all seriousness, for my valuable advice! Now, I ask you, what can you do with a fellow like that? Just nothing.

A man, whose brother has been mildly insane for two years, conceived the idea of sending him up in an airplane, in the hope that the ride would shock brother into sanity. He came to me—why, I don't know. Probably for the same reason that drunks have, when they invariably select me out of a large crowd to lean against, and cry on. I told him candidly that I had no faith in airplanes as cure for insanity, that I had been flying ten years myself and could note no improvement in my condition. But he insisted on the experiment and brought around brother, a thin man with the vacant hurt expression peculiar to imbeciles and those who have spent several years in the airplane business. When I was introduced to him he put his arms about my neck and kissed me. "You are very beautiful" he said simply. He was indeed mad poor chap. Well, I took him up. And all the time we flew around he kept looking back at me with a pained expression on his face. Then he took off his goggles and threw them over the side. His helmet followed, also a seat cushion, which hit the stabilizer a sickening crack. I know when I've had enough. We landed without delay. My passenger let out one wild yell, leaped from the plane and dashed madly across the field. I've never seen him since.

It was through odd luggage that I broke into the movies—though I never carried the luggage. A well-known vaudeville and movie star came to the field and was photographed sitting in the plane, ready to go to New York. Then the plane was turned around and the lady was shown landing at New York. A crowd of bumps, who infest the field, stood by the plane and were labelled in the news reel "Well-known members of New York society, welcome Miss Goolns."

So that she would show up the clearer, Miss Goofus sat smiling sweetly in the pilot's seat, while I smirked from the passenger's cockpit. The mechanic stood ready to turn the "prop" backward—if he'd turned it the right way, he wouldn't have got in the picture. And they wanted him in.

Well, when the pictures were taken, the dear little lady stepped out and went to New York by train, which showed she was quite as smart as all the important officers of the National Aeronautic Association. That's the only way they'd ever have gone there.

Recent Airplane and Seaplane Records

The Federation Aeronautique Internationale have recently recognized the following new world records for airplanes and seaplanes, established in accordance with F A I Regulations.

CLASS C—Airplanes
Without Useful Load

SPEED for 1000 Kilometers (France)
Lasne, Nieuport-Delage 42C1, Hispano Suiza 500 hp., Villesauvage-LaMarmagne, Sept 1 1925 — 248 206 k.p.h. / 154 283 m.p.h.

Former Record 1000 Kilometers (France)
Doret, Dorcelline, Hispano Suiza 300 hp, Villesauvage-LaMarmagne, Dec 28, 1924 — 221 775 k.p.h. / 137 804 m.p.h.

SPEED for 1500 Kilometers (France)
Lasne, Nieuport Delage 42C1, Hispano Suiza 500 hp., Villesauvage-LaMarmagne, Sept 12, 1925 — 218 227 k.p.h. / 135 566 m.p.h.

Former Record for 1500 Kilometers (United States)
Lt. Harold R. Harris, U.S.A. DH4L, Liberty 375 hp, Wilbur Wright Field, Dayton, Ohio, April 17 1923 — 184.03 k.p.h. / 114.35 m.p.h.

SPEED for 2000 Kilometers (France)
Lasne, Nieuport Delage 42C1, Hispano-Suiza 500 hp., Villesauvage-LaMarmagne Sept 1, 1925 — 216 756 k.p.h. / 135 930 m.p.h.

Former Record for 2000 Kilometers (United States)
Lt Harold R. Harris U.S.A., DH4L, Liberty 375 hp, Wilbur Wright Field Dayton, Ohio, April 17-1923 — 183.85 k.p.h. / 114.22 m.p.h.

CLASS C—Airplanes
With useful load of 500 Kilograms (1103.31 lb.)

SPEED for 500 Kilometers (France)
Lasne, Nieuport Delage 42C1, Hispano-Suiza 500 hp. Villesauvage-LaMarmagne Aug 30, 1925 — 218 750 k.p.h. / 135 930 m.p.h.

Former Record for 500 Kilometers (France)
Destaimps, Monge, Monoplane, Gnome-Rhone-Jupiter, 425 hp. at Villesauvage-LaMarmagne, Jan 25, 1925 — 213 053 k.p.h. / 132 385 m.p.h.

CLASS C—Airplanes
With useful load of 250 Kilograms (551.15 lb.)

SPEED for 500 Kilometers (France)
Lasne, Nieuport Delage 42C1 Hispano-Suiza 500 hp., Villesauvage-LaMarmagne, Sept. 12, 1925 — 240 618 k.p.h. / 155 105 m.p.h.

Former Record for 500 Kilometers (France)
Doret, Dewoitine Monoplane, Hispano Suiza 300 hp., Villesauvage-LaMarmagne, Dec 23, 1924 — 223 988 k.p.h. / 138 620 m.p.h.

CLASS C—Seaplanes

MAXIMUM Straightaway Speed (Great Britain)
Capt. H. C. Biard, Supermarine-Napier S4, Napier-Lion 450 hp. Southampton, Sept 13 1925 — 384 324 k.p.h. / 226 752 m.p.h.

Former Record for Maximum speed (U. S.)
Lt. George Cuddihy, U.S.N. Curtiss Navy CR Seaplane, Curtiss D12, 450 hp., Bay Shore Baltimore, Md. Oct. 25, 1924 — 302.68 k.p.h. / 188.06 m.p.h.

CLASS C—Airplanes
Returning to Point of Departure
With Useful load of 500 kg (1102.31 lb.)

SPEED for 100 Kilometers (France)
Fernand Lasne, Nieuport Delage, Hispana Suiza, 500 hp at Villesauvage-LaMarmagne, Oct 7, 1925 — 281 030 k.p.h. / 174 629 m.p.h.

Former Record for 100 Kilometers (Netherlands)
B. Grase, Fokker D.XIII, Napier-Lion, 450 hp at Bergen, June 16 1925 — 226 627 k.p.h. / 165 673 m.p.h.

SPEED for 200 Kilometers (France)
Fernand Lasne, Nieuport Delage, Hispano Suiza, 500 hp at Villesauvage-LaMarmagne, Oct. 7, 1925 — 279 720 k.p.h. / 176 606 m.p.h.

Former Record for 200 Kilometers (Netherlands)
B. Grase, Fokker D.XIII, Napier-Lion, 450 hp. at Bergen, June 16 1925 — 265 075 k.p.h. / 164 710 m.p.h.

CLASS C—Airplanes
With Useful Load of 250 kg (551.15 lb.)

SPEED for 100 Kilometers (France)
Fernand Lasne, Nieuport Delage, Hispano-Suiza, 500 hp at Villesauvage-LaMarmagne Oct. 7 1925 — 281 030 k.p.h. / 174 629 m.p.h.

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Former Record for 200 Kilometers (Netherlands)
B. Grase, Fokker D.XIII, Napier-Lion, 450 hp. at Bergen, June 16 1925 — 265 075 k.p.h. / 164.710 m.p.h.

CLASS C—Airplanes
With Useful Load of 1000 kg. (2204.60 lb.)

DISTANCE (France)
Fernand Lasne, Nieuport-Delage, Hispano-Suiza, 500 hp at Villesauvage-LaMarmagne, Oct. 16, 1925 — 200 km. / 124.27 mi.

Former Record for distance—None

SPEED FOR 100 Kilometers (France)
Fernand Lasne, Nieuport-Delage, Hispano-Suiza, 500 hp at Villesauvage-LaMarmagne, Oct. 16 1925 — 246 440 k.p.h. / 153 130 m.p.h.

Former Record—None

SPEED for 200 Kilometers (France)
Fernand Lasne, Nieuport-Delage, Hispano Suiza, 500 hp at Villesauvage-LaMarmagne, Oct 16 1925 — 244 664 k.p.h. / 152 151 m.p.h.

Former Record—None

The following new American records for airplanes and seaplanes have been recognized by the Contest Committee of the National Aeronautic Association.

CLASS C—Airplanes
Without Useful Load

SPEED for 100 Kilometers
Lt. Cyrus Bettis, U.S.A.S. Curtiss R3C1, Curtiss V1400, 500 hp. Mitchel Field, N. Y. Oct. 12 1925 — 401 366 k.p.h. / 249 287 m.p.h.

Former Record for 100 Kilometers
Lt. A. J. Williams, U.S.N. Curtiss Racer R2C1, Curtiss D12a, 500 hp at St. Louis, Mo., Oct 8 1923 — 362 178 k.p.h. / 343 812 m.p.h.

Speed for 200 Kilometers
Lt. Cyrus Bettis, U.S.A.S. Curtiss R3C1 Curtiss V1400, 500 hp Mitchel Field N. Y. Oct 12, 1925 — 400 667 k.p.h. / 248 675 m.p.h.

Former Record for 200 Kilometers
Lt. A. J. Williams, U.S.N. Curtiss Racer R2C1, Curtiss D12a 500 hp at St. Louis, Mo., Oct 8. 1923 — 362 154 k.p.h. / 243 672 m.p.h.

CLASS C—Seaplanes
Without Useful Load

MAXIMUM Straightaway Speed
Lt. James H. Doolittle, U.S.A.S. Curtiss R3C1, Curtiss V1400, 500 hp. Bay Shore Baltimore, Md. Oct. 27, 1925 — 305 477 k.p.h. / 345 713 m.p.h.

Former Record for maximum straightaway speed (Great Britain)
Capt. H. C. Biard, Supermarine-Napier S4, Napier Lion 450 hp Southampton — 364.634 k.p.h. / 230 752 m.p.h.

SPEED for 100 Kilometers
Lt. James H. Doolittle, U.S.A.S. Curtiss R3C1, Curtiss V1400, 500 hp. Bay Shore Baltimore, Md., Oct 26, 1925 — 377.820 k.p.h. / 234 772 m.p.h.

Former Record for speed 100 Kilometers
Lt. R. A. Ofstie, U.S.N. Curtiss Navy CR Seaplane, Curtiss D12a, 450 hp at St. Louis, Mo., Oct 25 1924 — 288 86 k.p.h. / 176 25 m.p.h.

SPEED for 200 Kilometers
Lt. James H. Doolittle, U.S.A.S. Curtiss R3C1, Curtiss V1400, 500 hp Bay Shore, Baltimore, Md. Oct 26, 1925 — 377.168 k.p.h. / 234 355 m.p.h.

Former Record for 200 Kilometers
Lt. R. A. Ofstie, U.S.N. Curtiss Navy CR, Seaplane, Curtiss D12 450 hp. Bay Shore Baltimore, Md. Oct 25 1924 — 286 86 k.p.h. / 178 25 m.p.h.

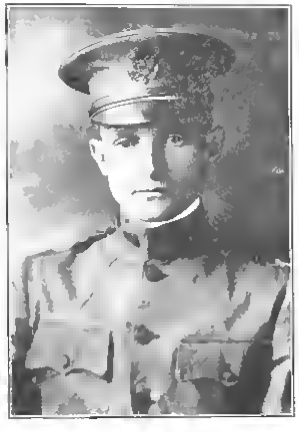
Designing Engines Into Airplanes

By COL. J. G. VINCENT

Packard Motor Car Company

FOR YEARS we have been reading of how this and that airplane was designed around this or that engine and this was necessarily so because the airplane designer was limited in his choice of engines, there being perhaps only one engine of the desired output, available. This situation is rapidly changing and there are now quite a variety of engines in each power class either in production or well along in the development stage.

For example, in the 400-500 hp. class, which represents the size most in demand at the present time, there exist twelve cylinder Vee type water cooled direct drive engines, the same engines provided with a gear reduction to the propeller, similar engines adapted to run in the inverted position, twelve cylinder W type water cooled engines with and without gearing, nine cylinder air cooled radial engines and twelve cylinder Vee type air cooled engines, in both the upright and inverted form. A review of this list of engine types indicates that the airplane designer has considerable latitude in his choice of a power plant and it is quite reasonable to suppose that he will favor the design of power plant which best fits into his airplane rather than design a plane around some particular engine.



Col. Jesse G. Vincent

In a measure, he is merely following in the footsteps of the automobile designer, who twenty years ago, was forced to design his car around some particular engine but a few years later was able to choose an engine which best fitted into his car. For example, the old horizontal angle cylinder and two cylinder opposed engines, could only be located with the cylinders in a fore and aft axis in the chassis and the body had to be superimposed in the best available fashion. Later, four, six and eight cylinder in line engines were evolved and during the last decade we have all seen how well these engines can be adapted to attractive, streamlined automobiles.

Undoubtedly a somewhat similar trend of affairs will be observed in airplane design. Unlike the automobile development, however, appearance will not dictate new designs but performance and utility. If two airplanes have the same carrying capacity and the same landing speed and employ the same size of power plant and one has higher speed and a better climb than the other, there is no question as to which will be the most successful. Furthermore, if one plane handles well and has excellent vision, whereas the other has bad blind spots, there is no question as to which will be favored by the pilot.

These remarks might be interpreted as being merely truisms, but the fact remains that there are many examples of up-to-date planes which have radically different performances, in spite of the fact that they are equipped with similar engines, have similar wing spread and similar load capacity.

One influence, which brings this about, is undoubtedly the factor of propulsive efficiency, which has evidently not been given due recognition by many airplane designers in the past. That percentage of the propeller disc area, which is masked by the forward end of the fuselage, exerts a very unfavorable influence on the performance of the plane. Here again is a self evident fact and yet it was not so very long ago that designers maintained that the forward end of the fuselage exerted little influence on the performance of the plane.

Importance of Vision

However, an even more important consideration will undoubtedly, in the future, dictate the design of the nose of a single engine tractor machine and that is, the question of vision. With few planes in the air and these piloted by highly trained men with landings being made on large prepared fields carefully policed to avoid obstruction, there has not been felt in the past the very pronounced need for good vision for the pilot, which undoubtedly will be demanded in the future. The fact that, in the average plane, the pilot is faced with a bad blind spot directly ahead and below is not of much consequence when the chances of his colliding with another plane are as remote as they are today.

We cannot, however, enthuse about commercial aviation and talk about tens of thousands of planes in the air, without, at the same time, giving serious consideration to this very important point of securing better vision for the pilot. We cannot think of planes dropping-in every few minutes, onto commercial landing fields, without also recalling that the pilot must be able, at all times, to survey the field directly ahead of him and avoid collisions with other planes or objects on the field.

Air and Water Cooled Engines

Taking the above considerations of good airplane performance and excellent vision requirements into account, it is evident that the time is rapidly approaching, when the airplane designer will begin to cast around for engine types which lend themselves particularly well to meeting these requirements.

Engines are naturally divided today into two classes,—air cooled and water cooled. It would appear that the air cooled engines of various types are too early in the development stage to warrant a very positive discussion as to which type lends itself best to the average single engine tractor airplane installation. Until the several different types in the development stage at present, are brought to a more highly developed status, it would appear futile to speculate as to which form of construction of air cooled engines will ultimately predominate.

No such hesitancy, however, need be exhibited in selecting the most promising type of water cooled engines, since these engines have arrived at a fairly well advanced stage of development.

Six General Water Cooled Types

Assuming that this discussion centers around engines developing between 400 and 500 hp., which apparently represents the most active field at the present time, there are about six general types of this class of engine to choose from. These

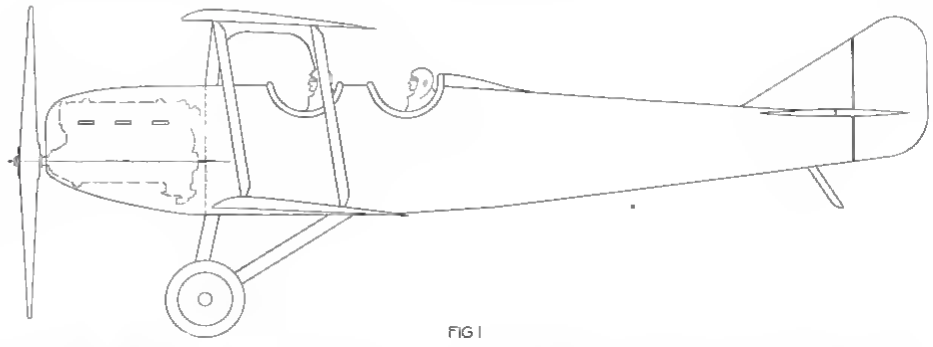


FIG 1

are all of the 12-cylinder variety and are listed as follows:

Twelve cylinder Vee upright direct drive,
Twelve cylinder Vee inverted direct drive,
Twelve cylinder Vee upright geared,
Twelve cylinder Vee inverted geared,
Twelve cylinder W upright direct drive,
Twelve cylinder W upright geared.

Geared or Direct Drive

The first consideration, which the designer faces in his choice of power plant, lies in the question of geared versus direct drive engines. It has lately been shown that, for maximum overall efficiency, a propeller speed of about 10 r.p.m. per mile per hour, is desired. Therefore, if the specifications for the plane speed call for 100 m.p.h. a propellar speed of about 1000 r.p.m. is desired. An engine speed of 1000 r.p.m., however, is considered altogether too slow for an engine of around 400 to 500 horsepower, as such a comparatively slow speed engine would have to be very bulky and heavy to develop its output at this speed. With such an airplane design, therefore, a geared engine is almost essential, if a high degree of efficiency is sought and a propeller gear reduction of 5 : 3 or 2 : 1 would appear desirable, thus giving an engine speed of 1700 r.p.m. and 2000 r.p.m. respectively.

Having decided on a geared engine, the next thing would be to decide as to what form of gearing should be employed and as to how the gearing should be arranged. There are two forms of successful gearing in use today, the one being the epicyclic type in which the propeller axis is concentric with the crankshaft axis, and the other being the spur gear type in which these two axes are displaced relative to each other.

As the slow speed propeller shows its maximum efficiency with this comparatively slow speed airplane, it must necessarily be of large diameter and it naturally follows that it is advantageous to have the propeller shaft center as high as possible from the ground, to obtain the maximum propeller tip clearance with a minimum height of landing gear. Accordingly, the spur gear type of reduction gear would naturally be chosen and the arrangement of cylinders, which would offer the best streamline form for the nose of the machine, would naturally be between the upright Vee or W type. Which of these types would be preferable, would depend upon many considerations. The Vee type is generally simpler and more accessible, whereas the W type is slightly shorter and more compact but considerably less accessible.

Advantages of Geared Drive

In figure 2, there is shown diagrammatically, the possibilities of this type of engine, as compared with the direct drive form shown in figure 1, and the improved streamlining and far better vision of the geared engine installation, are immediately apparent. The aerodyamic advantages of the slow speed geared propeller are, of course, not apparent from an inspection of the drawings, but they are well recognized by those conversant with latest developments along these lines.

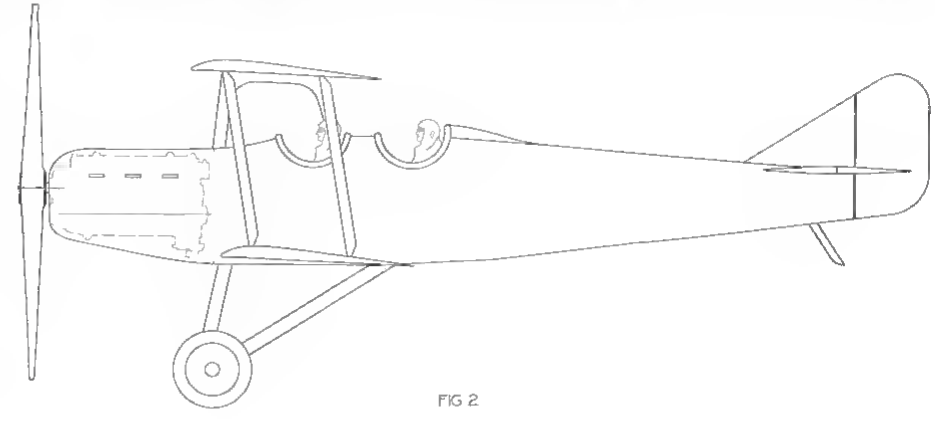


FIG 2

It might be of interest to recall here that the famous PN9 seaplanes have been lifted off the water, with a total load of 9½ tons, by two Packard 500 hp geared engines. This represents fully 1-3 more dead weight than could be raised from the water by direct drive engines.

Engines for Pursuit Types

Reverting now to the question of high speed planes, such as the Army and Navy Pursuit type, it will be seen that consideration of the most efficient propeller speed, no longer necessarily calls for geared propellers. Assuming an air speed of 200 m.p.h. is desired, this would correspond to a propeller turning about 2000 r.p.m., which would represent a satisfactory crankshaft speed for the size of engine under consideration. The choice would then lie between a direct drive upright and a direct drive inverted engine.

The vision advantage in the case of the inverted engine installation is further borne out by the fact that the top part, projected by the fuselage nose, is reduced as a vision hazard. With the upright engine installation, the width across the cylinder banks in the case of the 1500 installation is approximately 26″ to 30″, depending upon the degree of cowling declared necessary in a particular design, while, in the inverted position, the width of the fuselage at the top would be approximately 15″ to 18″. The section of the fuselage through the engine compartment, would, in the ideal case,—with an inverted 1500 installation,—be of an inverted keystone-shape. This would allow the pilot to gain a greater inherent range of vision forward for a given position of the eye, without body maneuvering in the cockpit for visibility advantage in landing, spotting other aircraft, or in combat.

In regard to vision, the following table, which indicates the comparative vision possibilities of the three planes shown in the sketches, has been prepared.

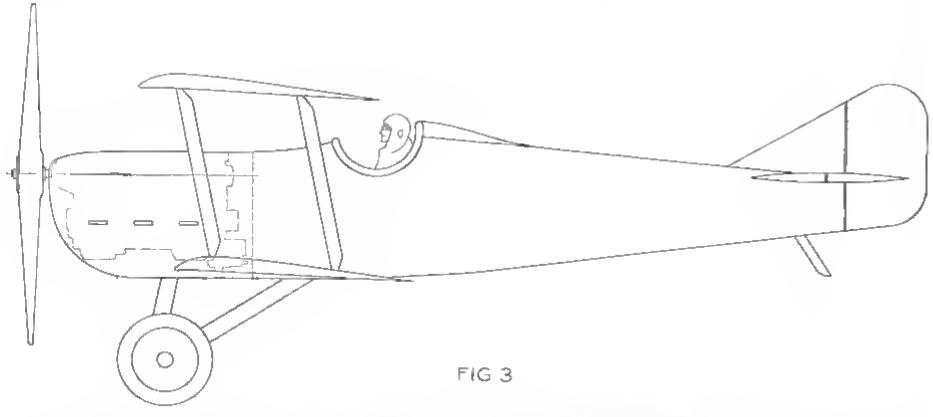


FIG 3

A comparison between figures 3 and 1 shows conclusively that the inverted engine is far superior to the upright in respect to improved streamlining into the fuselage, as well as more nearly meeting ideal vision requirements for the pilot. This latter consideration is, of course, of even greater importance with the higher speed planes, especially of military type and the inverted engine possesses still further advantages in its favor for use in high speed planes for military purposes.

The high position of the thrust axis in the case of the inverted type relative to the upright type, gives a further advantage by doing away with the objectionable thrust couple, which becomes noticeable between the "power-off" and "power-on" conditions. This becomes exceedingly important at cruising throttle and in military combat types, which engage in frequent combat maneuvering. With a thrust axis more nearly coinciding to the position of the center of gravity and the center of resistance, a more stable machine is derived for the afore mentioned "power-off" and "power-on" conditions, and as a result, the elevator stick control forces are reduced. This further obviates the necessity for adjusting the fore and aft trim of the airplane by means of the stabilizer trimming gear.

The carburetors, due to their low location on the engine, make a gravity feed fuel system possible, thus eliminating the complexity and danger of pressure fuel systems. Furthermore, in the case of the inverted type, a greater degree of accessibility around the cylinder heads is derived, and inspection is rendered easier for the mechanics in the field.

The exhaust manifolds, being low down, discharge the exhaust gases to the rear without annoying the pilot, and the glare of the exhaust does not exert the blinding influence on his vision in night flying, as would the exhaust manifolds of an upright engine.

It will be noted that, in the case of the geared engine, the pilot's line of vision strikes the ground when leveling off just previous to landing, about one-half the distance from the plane, as compared with the distance when using the direct drive engine. On the other hand, the inverted engine decreases this distance by about two thirds, clearly bringing out this very desirable feature in connection with the inverted engine.

COMPARATIVE ANGLES OF VISION IN LEVEL FLIGHT

	1500 Direct	1500 Geared	1500 Inverted
Angle of vision from line of thrust	2½°	5°	1°
Distance to centerline of axis at intersection of line of vision with ground line	185 ft.	87 ft. 4 in.	56 ft. 6 in.

Summing up, it would appear that the present trend of airplane design should favor the adoption of twelve cylinder upright geared water cooled engines for heavy duty comparatively slow speed planes, and, for fast single seaters, the twelve cylinder inverted water cooled direct drive engines offer interesting possibilities.

In confining this discussion to water cooled engines, there has been no attempt made to disparage the attainments of air cooled engines, but it has been recognized that the water cooled engine has reached a stage of development, where we are justified in concentrating our efforts on those types which lend themselves particularly well to airplane installations, while, in the air cooled field, it is far too early to abandon any one type in favor of any other type, since the experience with these engines has not been sufficiently broad to warrant any such action.

The author is indebted to A. V. Verville for his co-operation in the designs shown in the illustrations.

AIRPORTS AND AIRWAYS

Boston, Mass.
By Porter H Adams

Great interest, both in aviation circles and on the part of the public, is being aroused in Boston by the forthcoming New England Aviation Show, which is to be held in Mechanics Building, December 2nd to 5th, as part of the Army and Navy tournament being held there, for the benefit of the Army and Navy Service Club of Boston. Several ships have already been promised and various exhibits of interest will be part of the show. The Wright Company is sending up the big Wright Bellanca six-passenger ship, which will fly to the Airport, be disassembled and taken to the show. The Curtiss Company are endeavoring to get, either the Pulitzer and the Schneider Cup racer, sent up by the Army, and the Cox-Klemin company is reported as desiring to enter a ship in the show. The Army will, in any event, put a late model JN on the floor and the Navy is entering the UO Vought. Among the other exhibits, will be one sponsored by the Boston Chapter of the National Aeronautic Association and another under the auspices of the Aeronautical Engineering Society of the Massachusetts Institute of Technology.

It is with great regret that we report that Lt. Comdr Noel C Davis, U S N R., who, for sometime past, has been commanding officer of the Naval Reserve Air Station at Squantum, has been ordered to Washington to take charge of all Naval Reserve Aviation matters in the Bureau of Aeronautics. It is hoped, however, that Davis' sojourn in Washington will only be until spring and that, when good flying weather again arrives in New England, it will find Davis back on the job, where he has made such an excellent record. In the meantime, Lt. Reginald D Thomas, holder of the Boston Army and Navy trophy for safe flying and winner of the 1924 and 1925 Shiff Memorial trophy, will be in command of the station. Thomas is a worthy successor to Davis and no one in New England, by their example of safe and sane flying, has done more to convince the public that aviation is not dangerous.

Commander John Rodgers of the PN9, has been in Boston for several days and told the story of the Hawaiian cruise at the Algonquin Club, at a dinner at the Boston City Club, and to the Aeronautical Engineering Society of the Massachusetts Institute of Technology. He flew to Boston with Lieutenant Curtin and left by train last Monday for Washington.

The National Guard has received some new TW3, side-by-side training planes and, so far, report that they like them very much. During the week the National Guard made 16 flights with a total time of 520 minutes, while the Army made 60 flights for a total time of 1615 minutes and the Navy made 97 flights for a total time of 4,661 minutes.

Cy Caldwell has saved us a lot of trouble, for we were just about to go over to Harvard University and look up the geneology of the Modocks, but the announcement in the last publisher's news letter of this magazine, has convinced us that any amateur investigation would be superfluous in view of the fact that such an authority as Cy, is publishing an accurate history of this interesting race.

Hartford, Conn.

The last Legislature appropriated $112,000 for aviation in this state. This called for an enlargement of Brainard Field and the erection of new buildings to house the activities of the 118th Observation Squadron. This organization has been carrying on its work in the state armory in this city, while the actual flying has been done on the above mentioned field.

The work has begun. When completed, the new field will be enlarged from ninety acres to one hundred thirty-five. There will be an armory, in which will be housed all the departments of the squadron, such as the administrative, operations, supply, and medical. There will be machine shops, living quarters for the resident force and recreation rooms for the members of the organization. In addition, the two steel hangars now in use will be moved from their present location and incorporated into the unit of buildings. There will be one large municipal hangar, one Air Mail hangar and probably one Reserve Officers hangar.

When completed, the facilities for carrying on the work of instruction in the squadron, will be greatly increased, for the members will at all times be given practical work, which can now be carried out only during the summer months.

Iola, Kansas

By Paul Neff

The gang wound up their crates and flew to Richards Field, Kansas City, to look over the ships in the Fokker, Ford, Reliable Publicity Tour, and also attended the banquet in its honor.

B. T. Barber and Paul Neff are doing considerable cross country flying of late, carrying passengers. Barber supports Cy Caldwell's Skunk story. B. T. was flying along at 1500 ft. and suddenly decided a Skunk had made its home in his fuselage, but upon landing he found, to his relief, he was alone. The odor coming up from below.

Tod Tobey is getting in a lot of solo time on his model S, Laird. Eril Beach tried to stretch a glide at Humbolt, Kansas, a few days ago and didn't make it and lost his landing gear.

Fritz Womac tried to stretch a glide and didn't make it, resulting in a complete washout. Fritz is now buying a Jenny. It's funny they won't stay up after they lose their flying speed. Fritz says he is going to put a sky hook on the Jenny.

Clarence Clark, a local pilot, is now flying for the Travel Air Co. at Wichita, Kansas.

Monmouth, Ill. News

By Ralph B. Eckley

The first of the new Waco airplanes, for which the Mid-West Airways Corp. is the Illinois distributor, was flown from the factory of the Advance Aircraft Co. at Troy, Ohio, to the local field, on Saturday, November 14, by John Livingston, manager and chief salesman of the Mid-West organization. The trim little plane was put through a series of tests upon its arrival and gave a remarkable performance, taking off in a very short distance and climbing rapidly at a steep angle.

In a weight carrying test, the Waco was loaded with 1,000 lb. of sand ballast, in addition to 100 lb. of gasoline and 160 lb. pilot, which the plane lifted off the ground after a fairly short run and carried with ease. The load of 1260 lb. was just 210 lb. more than the weight of the Waco, which is 1050 lb. Mr. Livingston estimates that the plane could have taken an additional load of 200 lb., if the ballast had been available.

Mr. Livingston will make a sales trip over the state with the Waco, soon.

Cadets in the Illinois Military School at Aledo, located thirty miles north of this city, will be given a thorough course in aviation, according to an arrangement completed on November 11, between Col. Clyde R. Terry, president of the school, and officials of the Mid-West Airways Corp. The new course will include theory of aeronautics, which will be taught in the classroom at Aledo, and ground school and flying training, which will be handled in Monmouth.

Col. Paul Henderson and a party of officials of National Air Transport, Inc., visited the Monmouth Field on November 8. The party was making an overland trip from Chicago to Dallas, Texas, to select landing fields and to complete arrangements for starting the contract mail route via Moline, St. Joseph, Kansas City to Dallas, on April 1, 1925. Accompanying Col. Henderson were, Luther K. Bell, traffic manager; E. P. Lott, chief pilot; Donald Bartlett, assistant manager; and C. T. Ludington, of Philadelphia, a director and member of the executive committee of the company.

Shop facilities of the Mid-West company have been greatly enlarged during the last few weeks in preparation for the winter work at the field. Plans have been made to give all of the airplanes owned by the company a thorough overhaul before spring. New tools and machine equipment have been purchased, making it possible to handle almost any job. A number of Curtiss OX5 motors and a supply of spare parts were also recently purchased.

San Diego News

That the recent races in New York and sundry other aeronautical events have made the people a little more air-minded, is quite apparent around this row of hangars. Yesterday, three sportsmen from Los Angeles charted a special plane from the Los Angeles-San Diego Airline, to make a 2,000 mile trip into Texas and New Mexico. Trips of this kind are not unusual, although this is one of the longest.

After seven months operation of a daily scheduled airroute, the Los Angeles-San Diego Airline has finally taken a complete inventory of itself and found nothing wanting, either in the way of passengers or revenue.

Amassing a total of 74,000 passenger miles in the seven months run without a serious delay or mishap of any kind is their proud record. This run started March 1 and is considered the pioneer daily airline of America. Without the aid of outside capital, Ryan and Mahoney of San Diego inaugurated the airline service and have found that the line "paid for itself." Heavily subsidized European airways please note.

Yackey Checkerboard Field, Forest Park, Ill.

By Thos. J. Brown

Business is picking up in and around Chicago, especially at Yackey's. Laird is now at his new place at Ashburn and is demonstrating every day and having a hard time to keep apace of his orders, while Ed. Heath reports a healthy growth of his business, both at the factory and the field. Yackey, in the last eight weeks, have disposed of and taken orders for ten new and used planes: Mr. Killops, of the Lyons and La Grange motor sale, has purchased a Yackey "Sport" to facilitate his going and coming between his places of business and the Hudson & Essex factories; Mr. Horton, of Plano, Ill., has taken delivery of a Yackey "Sport"; Mr. Bauer, of the Mener Peil Auto Co. of Marshfield, Wis., took delivery of a Yackey "Sport" in the latter part of October; Mr. Killops has paid deposit on a Yackey "Transport", for delivery in early March; Mr. Glodeu, of Deerfield, Ill., purchased a Standard, which we took in on trade, Ben Robinson of Chicago purchased another used and "re-new-ed" Standard; and the Peterson Bros., of La Grange, took a used JN4D with OX5. Miss Leslie Malee has ordered a new Yackey "Sport" with enclosed cabin and Curtiss Reed propeller. Another new student has ordered a Yackey "Sport" for delivery in four months.

We have had a very bad fall and there are indications of a severe winter, yet business has been on the rise, which is most encouraging to those who are vitally interested in commercial aviation From available information, all other fields in this locality have done well too

In past years, one interested and versed in aviation could keep track of the airplanes in his locality, but now it seems utterly impossible to do so The added competition has so increased the demand for commercial aircraft

The amount of business done in eight weeks, by one manufacturer alone, and many others have done likewise, no doubt, should prove to the most skeptical that commercial aviation is rapidly growing

The operations department of Yankeys has fourteen students enrolled, has soloed six in the last two weeks, has flown 3,849 miles in cross-country flying in two weeks, thrown out 300,000 handbills for the Leiter Stores of Chicago, done 86 hours flying for the Aerial Photographic Survey of Chicago and has made 17 trips to football games, besides servicing twenty-one cross-country planes for gas, oil and storage This excludes the work done by seven commercial ships, which have hangar space, operating from this base, all of which have done a considerable business

All in all, we are coming into the greatest year that aviation has ever seen, and buyers of airplanes for use on America's airways are starting to place their orders for transportation

Memphis Aero Club Formed

By E. B. Ayres

The Memphis Aero Club composed of ex-fliers and persons interested in the promotion of aviation, was organized at a luncheon at the Hotel Chisca

The club was organized with the primary object of arranging the preliminary financing of a landing field for Memphis

The club was launched with a membership of eighteen Everett Cook was elected president, with Louis Carruthers, vice president Lay Whitten is secretary and Troy Beatty, treasurer, while Edwin Williams was named a director

Memphis also has a flying school to go into operation in a month or so, with a separate landing field about 6 miles from Memphis, on a 60 acre tract on which the Dixie Flying School will do advertising and passenger service Memphis has finally got interested in aviation and we hope will be one of the largest airports in the South, for we are working hard, with the help of the Chamber of Commerce, to put it through

Cumberland Welcomes Aviators

Cumberland, Maryland, is another community where pilots are welcomed with open arms. The Mayor and City Commissioners, realizing the military and civil necessity of adequate development of air transportation, wish to extend the general freedom and courtesies of the city to those who are pioneers in this cause

Visiting pilots are extended special courtesies at hotels and clubs, etc, upon presentation of a card which will be given them

In addition pilots are given the following instructions which are somewhat novel At any time it is necessary to reach a point in the city with the least possible delay, fly west along the main business street crossing Wills Creek, halfway up the hill are two churches directly opposite each other, make two left hand circles above and including both towers at an altitude low enough to promptly attract attention, then proceed to the field A "71" taxi will immediately be despatched to the field, a saving of about 20 minutes time Note Pilots are requested to use due caution and not to construe this as an invitation to "Jazz" the city

UNITED STATES AIR FORCES

U. S ARMY AVIATION

Sparta, Wis., Military Flying Field

In honor of 1st Lt Robert H V. Stackhouse, A S, who was killed in an airplane accident July 27, 1922, at Chanute Field, Rantoul, Ill., the flying field on the military reservation at Sparta, Wis., has been designated by the War Department as "Stackhouse Field"

Air Service Enlisted Men Receive Commissions

The following enlisted men in the Air Service recently received commissions as 2nd Lieuts with rank from June 15, 1925

Master Sergeants Walter L Wheeler and Benjamin T. Starkey, Staff Sergeants Norme D Frost, Milton M Murphy, Lee Q Wasser, Technical Sergeants Linus D Frederick and George C McGinley, Flying Cadets Otto Wienecke and Willard L Harris Lieuts. Frederick, Murphy and Frost were assigned to Brooks Field, San Antonio, Texas; Lieuts Wasser, McGinley and Wienecke to Kelly Field, Texas, Lieutenant Wheeler to the Hawaiian Department, Lieutenant Harris to Langley Field, Va.; and Lieutenant Starkey to Phillips Field, Md

Three civilians also have received commissions as 2nd Lieuts in the Air Service and were assigned to the Primary Flying School at Brooks Field, Texas They are Aaron Jackson Yanger, Charles H Valentine and Joseph K Gibson

Fifty-Two American Air "Aces"

It is reported that the following fifty-two American pilots are credited with having brought down five or more enemy planes during the World War

Lt Col William Thaw, Pittsburgh, and Majs George A. Vaughan, Brooklyn, N Y, J A Meissner, Brooklyn, N Y., H E Hartney, of New York City, H D McPherson, Honesdale, Pa, and C J Buckley, of Agawan, Mass

Capts E V Rickenbacker, of Columbus, Ohio, Reed G Landis, Chicago, Jacques M Swaab, Philadelphia, Field Kuley, Gravette, Ark., E W Springs, Ft Mill, S C; DeF Larner, of Washington, D C; Reed M Chambers, Memphis, Tenn, H Weir Cook, of Toledo, L C Holden, of New York City, Howard Burdick, Brooklyn, N Y., Douglass Campbell, Mt Hamilton, Calif; J C Vasconcelles, Denver, E G Tobin, San Antonio, Capt Sumner Sewell, Bath, Me, H R Buckley, Agawan, Mass; C J Biddle, Philadelphia, James A Healey, Jersey City, and J. O Donaldson, New York

Lts E M Haight, Astoria, L.I., H H George, Niagara Falls; G W Furlough, Rochester, Frank L Hale, Syracuse; E A Esterbrook, Ft Flagler, Washington; B V. Baucom, Milford, Tex, J S. Owen, Baltimore, T G Cassady, address

unknown; Chester E Wright, Cambridge, Mass; W P Erwin, Chicago; P E Baer, Ft Wayne, Ind; F O D Hunter, Savannah; Clinton Jones, San Francisco; W A Robertson, Ft. Smith, Ark; R J Rummell, Newark; J O Creech, Lexington, Ky; E P Curtis, Rochester; R A O'Neill, Nogales; Donald Hudson, Kansas City; M K Guthrie, Mobile; W H Stovall, Stovall, Miss; R O Lundsay, Madison, N C; Martin Steuseth, Twin City, Minn; F K Hays, Chicago; Howard C Knotts, Springfield, Ill; James A Knowles, Cambridge; Innis Potter, Boston, and F M Symonds, of New York City.

Army Air Orders

First Lt Clayton L Bissell, A S, detailed as asst def Counsel of Gen Court Martial appointed by Par 17, Spec Or 248.

First Lt Lewis A Dayton, A S, San Antonio, to San Francisco, sailing on transport for the Hawaiian Dept Apr 2nd.

First Lt Floyd A. Lundell, A S, upon completion of present tour of foreign service to Kelly Field.

Spec Or 160, relieving Sec Lt Foster Virgina Tompkins, A S Res, from duty Langley Field and directing him to revert to inactive status, revoked, Lt Tompkins being relieved from assignment and duty Langley Field and will proceed to Houston.

Maj Lawrence W McIntosh, A S, detailed as member of board of officers appointed by Par 20, Spec Or 235-O, to meet in Washington for the purpose of standardizing the form of war contracts.

Vice Maj John D Reardon, A S, relieved as member of board of officers appointed by Par 20, Spec Or 235-O, to meet in Washington for the purpose of standardizing the form of war contracts.

Spec Or 188 assigning First Lt Robert V. Ignico, A S, San Antonio, amended to assign Lt Ignico to duty Scott Field.

Spec Or 259, relieving First Lt Gilbert S Graves, jr, A S, from duty 77th Div, New York City, and directing him to proceed to Mitchel Field, revoked, Lt Graves to report to Com Off, Mitchel Field.

Spec Or 223, assigning First Lt Kellogg Sloan, A S, to duty Kelly Field, amended to assign him to duty Bolling Field.

U. S. NAVAL AVIATION

Court of Inquiry on Loss of Seaplanes

A court of inquiry appointed by the Secretary of Navy, composed of Capts Reginald R Belknapp, president, Herbert C Cocke, Comdrs Robert W Cunningss and Herbert H Michael, all U S N, met on Nov 9 at the Naval Operating Base, Hampton Roads, Va, to inquire into the loss of the Navy seaplanes at Baltimore, Md, on Oct 25.

Twelve pilots testified on Nov 10, that the moorings, were useless in the high winds that wrecked the two squadrons of a score or more machines.

Quantico Marines Beat Aircraft Squadrons

With the great Goettge in the lineup, the Quantico Marines earned the right to meet Fort Benning in the little Army-Navy classic for the President's Cup at Washington, D C, Nov 21, by defeating the U S S Wright team of the Aircraft Sqdn's 40 0 at Hampton Rds on Armistice Day. The Marines also beat West Va. Wesleyan at Baltimore, Nov 7, by a score of 12-0.

Henry, Marine left halfback, shared stellar honors with Goettge, crossing the Navy airmen's goal line four times. The lighter sailor team fought with desperation but had little to offer to stop the dazzling Leatherneck attack.

Rockaway Lost to Navy

The City of New York has decided that the Navy Department must vacate that part of Jacob Riis Park, on the Rockaway peninsula, which has been used since the war as a naval

base and aviation field. The Rockaway Station is situated on the coast, near Coney Island and has several large hangars, a good concrete beach and a small landing field. Its abandonment will leave New York without any decent base for Naval Aviation activities, as the facilities at Fort Hamilton are very bad, as well as being inadequate. It also will leave no Naval Air Base on the Atlantic Coast between Boston and Hampton Roads.

The fight to retain possession of the Rockaway Station has been going on for several years but, on Nov 19, the Commissioners of the Sinking Fund of New York City voted unanimously to deny the application of the Navy Department for permission to acquire, by purchase, ninety-four acres of the park as a permanent air station. Until now the Navy has been a tenant under a permit from the Park Department. Citizens in the vicinity have made many complaints that low-flying planes have made the park hazardous as a playground for children.

Navy Air Orders

Lt. (jg) George C Miller det. N A S, Pensacola, Fla., to USS Richmond.

Lt Carl J Robertson (MC) det Rec. Ship, San Francisco, to Nav Air Sta, N O B, Hampton Roads.

Ens. Earl Maeser to continue duty Nav Air Sta., Pensacola.

Preliminary Wing Model Tests in the Variable Density Wind Tunnel of the National Advisory Committee for Aeronautics

This report contains the results of a series of tests with three wing models. By changing the section of one of the models and painting the surface of another, the number of models tested was increased to five. The tests were made in order to obtain some general information on the air forces on wing sections at a high Reynolds Number and, in particular, to make sure that the Reynolds Number is really the important factor, and not other things like the roughness of the surface and the sharpness of the trailing edge.

The few tests described, seem to indicate that the air forces at a high Reynolds Number, are not equivalent to respective air forces at a low Reynolds Number (as in an ordinary atmospheric wind tunnel). The drag appears smaller at a high Reynolds Number and the maximum lift is increased in some cases. The roughness of the surface and the sharpness of the trailing edge, do not materially change the results, so that confidence is felt that tests with a systematic series of different wing sections, will bring consistent results, important and highly useful to the designer.

The report, No 217, which is by Max M. Munk, may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D C.

New Aerial Lighthouse in Philadelphia

A new flashing beacon is to be erected on the twenty-two story office building of the Atlantic Refining Company of Philadelphia. Work has been started by the B B T Corporation of America for the installation of the powerful flashing aerial lighthouse as a guide in night flying. On the much travelled air way between New York and Washington, pilots often lose their way owing to the fact that there are no guiding lights. This civilian co-operation is a most constructive step toward safeguarding night-flying operations.

In order that the light may be distinctive and not be confused with any other lights in the city, the B B T beacon will be equipped with a flashing mechanism, similar to that used in large lighthouses. The light will flash five seconds on and five seconds off and will be visible at distances of twenty to thirty miles. The light will be turned on at five p m each evening and will remain in service until midnight or later. This beacon will enable pilots to determine their exact position and bearing in relation to the location of the Philadelphia landing field, at all times.

INDEX TO ADVERTISERS

A

Advance Aircraft Co 785
Aircraft Service Directory 790-791
Alexander Aircraft Co 783
Arthur A Co, Inc, William E 785

C

Carpenter, Fred A 790
Classified Advertising 786
Crawford Airplane Co 790
Curtiss Aeroplane & Motor Corp'n 768

D

Decatur Aircraft Co 791

G

Guggenheim School of Aeronautics, Daniel 791

H

Hall, Chas Ward 780
Hamilton Aero Mfg Co 790
Haskelite Mfg Co 791
Huff, Daland & Co 790

I

Ireland, G S 791

J

Johnson Airplane & Supply Co 766
Johnson Motor Products Co 791

L

Lamblin Establissements 783
Logan, Floyd J 790
Ludington Exhibition Co 791

M

Monumental Aircraft Co 790

N

New England Aviation Show 782

O

Ostergaard Aircraft Works 790

P

Paragon Engineers, Inc 790
Peck, Allen E 791
Pioneer Instrument Co 790
Polachek, V H 790
Prest, Clarence O 791

R

Read, S A 790
Robertson Aircraft Co 766

S

Scintilla Magneto Co 767
Shannon & Wert Bros. Aviation Co 791
Southern Airways, Inc 784
Spalding Construction Co 791
Summerill Tubing Co 783
Swallow Airplane Co 782

T

Tips & Smith 791
Titanine, Inc. 784
Travel Air, Inc. 760

V

Vought Corporation, Chance 779

W

Warner, Edward P. 791
Where to Fly 788
Wood Elastic Web Co., J. W. 784
Woodson Engineering Co 790
Wright Aeronautical Corp 792

Y

Yackey Aircraft Co. 791

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